A.D. 1876, 11th MAY. N° 1978. R

Refers 1865 – 154

Dressing or Polishing Stone.

LETTERS PATENT to Walter Grant, of Johnstone, in the County of Renfrew, North Britain, Engineer, for the Invention of "IMPROVEMENTS IN MACHINERY FOR DRESSING OR POLISHING STONE."

Sealed the 23rd September 1876, and dated the 11th May 1876.

PROVISIONAL SPECIFICATION left by the said Walter Grant at the Office of the Commissioners of Patents on the 11th May 1876.

WALTER GRANT, of Johnstone, in the County of Renfrew, North Britain, Engineer. "IMPROVEMENTS IN MACHINERY FOR DRESSING OR POLISHING STONE."

This Invention, which relates to improvements in machinery for dressing or polishing stone, has reference to that class of stone polishing machines for which Letters Patent were granted to James Coulter and Herbert Harpin on the 18th day of January 1865, No. 154.

In the Specification of the said James Coulter and Herbert Harpin the machine therein described consists of a circular and concentrically revolving table below, and a horizontal sliding frame above, in the table and frame; the stones to be polished are placed so that they rub upon and dress or polish one another.

According to the improvements constituting this Invention the upper or horizontally moving frame is dispensed with, and in place of it and the lower concentric table two eccentric tables, revolving in opposite directions, are substituted. By virtue of these tables revolving eccentrically and in opposite directions a more rapid rate of dressing or polishing is attained.

For the purpose of inspecting the surfaces being rubbed from time to time, that is to say, by separating them from one another, and also for the purpose of increasing the stress by which the rubbing surfaces are pressed together, the upper table is provided with a screw and hand wheel for operating it; also with gearing and shafting, to bring the same within reach of the attendant, so that by turning the hand wheel in one direction the upper table is lifted, and by turning it in the opposite direction it is forced down on the lower table with any required degree of pressure.

For the purpose of still further increasing the intensity or efficiency of the rubbing or polishing action either the upper or lower table, or both of them, have in addition to their eccentric sliding motion a horizontal sliding motion imparted

[*Price 4d.*]

to them, this being effected by connecting the bearings in which their shafts are carried either to an eccentric reversing screw camb or the equivalent thereof, so that as these rotate the tables with their shafts and bearings are reciprocated in guides.

Under another modification the horizontal sliding motion may be effected by carrying the eccentric tables upon rotating carriers fixed upon the driving shaft of each table, and the carriers are fitted with rollers so as to allow the tables to be moved backwards and forwards on them with a minimum of friction whilst rotating. The movement of the tables backwards and forwards upon the carriers is effected by guides placed round about and eccentrically to the revolving axles of the tables.

SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said Walter Grant in the Great Seal Patent Office on the 10th November 1876.

WALTER GRANT, of Johnstone, in the County of Renfrew, North Britain, Engineer. "IMPROVEMENTS IN MACHINERY FOR DRESSING OR POLISHING STONE."

My said Invention, which relates to improvements in machinery for dressing or polishing stone, has reference to that class of stone polishing machines for which Letters Patent were granted to James Coulter and Herbert Harpin on the 18th day of January 1865, No. 154.

In the Specification filed in pursuance of the Letters Patent above referred to the machine described by the said James Coulter and Herbert Harpin consists of a circular and concentrically revolving table below and a horizontal sliding frame above. On the table and in the frame the stones to be polished are placed so that they rub upon and dress or polish one another.

According to the improvements constituting my said Invention the upper or horizontally moving frame is dispensed with, and in place of it and the lower concentric table two eccentric tables, revolving in opposite directions, are substituted, and by virtue of the tables being made so to revolve a more rapid rate of dressing or polishing is attained.

And in order that my said Invention may be properly understood, I now proceed more particularly to set forth the system, mode, or manner in or under which the same is or may be used or practically carried into effect, reference being had to the annexed Sheet of Drawings, and to the letters and figures marked thereon, that is to say :—

On the Sheet of Drawings hereunto appended Figure 1 is a vertical section; Figure 2, an end elevation; and Figure 3, a plan of one arrangement of the improved stone dressing or polishing machine as constructed in accordance with my said Invention.

The apparatus consists of a framing A, the sole or bed plate whereof is shewn in part plan at Figure 4, and between the sole and the top member of the frame a vertical shaft B is supported in bearings. Towards the lower part of the said shaft is placed an eccentric C, which is formed with a long sleeve, supported at its lower end in a footstep bearing D, placed or formed on the sole or bed plate of the machine. The lower table E, on which a portion of the stones to be polished or dressed are placed is carried on the eccentric C, as seen more particularly at Figure 1, and the table is rotated by a bevil wheel F fixed on the sleeve of the eccentric, and geared with a pinion G situate on the driving shaft H, which is supported in bearings in the frame A. The upper table J, holding the other portion of the stones to be dressed or polished, is also similarly carried on an eccentric J^1, situate on a square portion of the shaft B, which is rotated by the bevil wheel K, fixed thereon and geared with the pinion L, carried on a second driving shaft M. The bevil gearing K, L, and the shaft B are rotated in the opposite direction from the bevil gearing F, G, so that in driving the machine the tables E and J are caused to revolve eccentrically also in opposite directions, by which means a more rapid rate of dressing or polishing of the stones is attained than with the class of machines herein-before referred to.

For the purpose of from time to time inspecting the surfaces being rubbed of the stones, that is to say, of separating them from one another, and also for the purpose of increasing the stress by which the rubbing surfaces are pressed together, the eccentric carrying the upper table J is attached by the rods or links N to a cross head O, through a sleeve *a*, at the interior of which a screw P passes, the screw being at its lower end secured to the top member of the frame A, as shewn. The rods N are attached to the eccentric by a ring *b*, which permits of the rotation of the table J without rotating the said rods; and when it is desired to inspect the rubbing surfaces of the stones, or to force such surfaces into greater frictional contact with each other the cross head O is raised or lowered vertically by the attendant turning the hand wheel *c* and shaft *d*, whereon a bevil pinion *e* is secured and geared with a corresponding wheel *f*, carried on the sleeve *a*, through which the screw P passes. The bracket in which the lower end of the shaft *d* is supported is made with a slotted hole, as is also the arm of the cross head O, or the bracket may be hinged or jointed to allow of the shaft rising or falling correspondingly with the cross head O.

In lieu of eccentrically rotating the tables E and J in opposite directions by bevil gearing actuated from different driving shafts, as herein-before described, the tables may be so rotated by the arrangement of bevil gear, illustrated at Figure 5 of the Drawings, in which the bevil wheel F situate on the sleeve of the lower eccentric and the bevil wheel K which through the shaft B drives the upper eccentric are rotated in opposite directions by one pinion Q. A shield is, or may be, placed above the bevil gearing, as seen at R, Figures 1 and 2, to prevent it from being fouled.

For the purpose of still further increasing the intensity or efficiency of the rubbing or polishing action the lower table may have in addition to its eccentric revolving motion a horizontal sliding motion imparted to it. Figure 6 on the accompanying Drawings represents in vertical section a machine constructed in accordance with my said Invention, and wherein the lower table A is so operated.

To effect the horizontal motion of the table A it is mounted by means of a hollow pillar or support B on a carriage or truck C, which runs upon a platform D forming part of or attached to the sole or bed plate of the machine. The carriage or truck C is attached by a connecting rod or link to a crank E fixed on the upper end of a vertical shaft *a*, which is also supported on the sole or bed plate. A bevil wheel *b* secured on the shaft *a* communicates reciprocating motion to the carriage or truck, being geared with a corresponding wheel *c*, situate on one end of a horizontal shaft F, at whose opposite end a worm wheel is fixed and geared with a tangent screw *d* placed on the lower end of the vertical spindle or shaft F^1, which is rotated from the driving shaft G by the spur wheel *e*, pinion *f*, shaft *g*, and bevil gearing H, as shewn. The upper table K is rotated eccentrically with the shaft F^1 by means of the eccentric I, in the manner herein-before described, and the lower table A, which is or may be supported on rollers *x*, is rotated eccentrically with the upper table, and in the opposite direction to it by the spur wheels M, *e*, shaft N, and bevil gearing O. The spur wheel M is keyed to the shaft N by means of a feather and groove, so as to permit of the shaft sliding through the boss of the wheel when the carriage or truck C is reciprocated, as herein-before described.

Instead of communicating horizontal sliding motion to the lower table A, such motion may be imparted to the upper table K in addition to its eccentric rotatory motion, or, if desired, eccentric, rotatory, and sliding motions may be communicated both to the upper and lower tables by cranks, cambs, or the equivalent thereof, which in rotating reciprocate the tables with their bearings in guides.

Under another modification, illustrated in vertical section at Figure 7 of the Drawings, the motions of the lower or upper or both eccentric tables may be effected by rotating carriers. On the Drawing the lower table A is shewn so supported on a carrier B and on rollers G, the carrier being secured on an outer shaft C which drives the lower table, the shaft D for the upper table passing through it. Bevil wheels, gearing with a pinion I, which drives them in opposite directions, are fixed on these separate shafts. The carrier B is fitted with rollers E, which are situated in a slot or channel in the under part of the table A, and these rollers bearing against the sides of the said channel rotate the table A in a circular path eccentrically to the rotation of the upper table, by which means a compound dressing or polishing motion is obtained, the upper table being also rotated eccentrically on its axis, in the manner herein-before described. The table A rotates in guides M placed round about it, and eccentrically to the revolving axle C of the carrier B.

Having now described and particularly ascertained the nature of my said Invention and the system, mode, or manner in or under which the same is or may be used or practically carried into effect, I would observe in conclusion that what I consider to be novel and original, and therefore claim as the Invention secured to me by the herein-before in part recited Letters Patent is,—

First. The improved stone dressing or polishing machine herein-before described and shewn at Figures 1, 2, and 3 of the appended Drawings or any mere modification thereof wherein eccentrically revolving tables moving in opposite directions are employed, as set forth.

Second. The producing of a sliding or reciprocating motion in stone dressing or polishing machines (in addition to the eccentric revolving motion) by the mechanism shewn at Figure 6 of the Drawings, or any mere modification or equivalent thereof.

Third. The mechanism herein-before described and shewn at Figure 7 of the Drawings, or any mere modification or equivalent thereof, for producing a compound eccentric rotatory motion of the table or tables of stone dressing or polishing machines, substantially as set forth.

Fourth. The application or employment of the screw apparatus for separating the tables, or for pressing the stones held therein against one another, substantially as herein-before described with reference to the Drawings hereunto annexed.

In witness whereof, I, the said Walter Grant, have hereunto set my hand and seal, this Ninth day of November, One thousand eight hundred and seventy-six.

WALTER GRANT. (L.S.)

LONDON: Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's Most Excellent Majesty. 1876.

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GB 000001978 A
MAY 1876

Glass and Stone,
Plane Surfaces.

6

1876 – 1978

Britain

British

1876

A.D.1876. May 11. No 1978
GRANT'S SPECIFICATION

(1 sheet)

See Modifications described in Abridgment (copy attached)

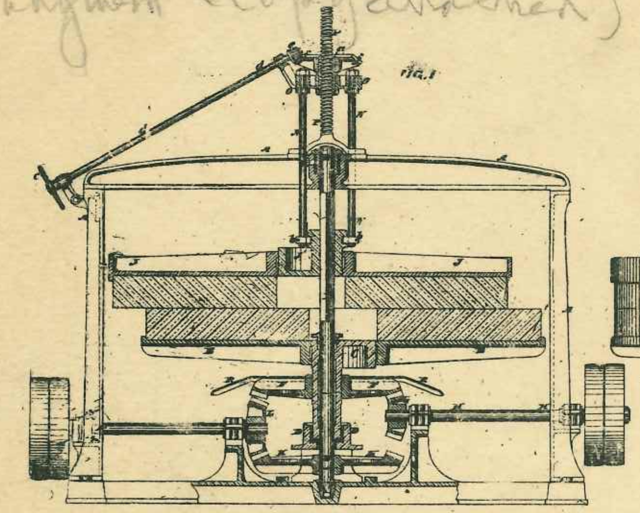

FIG.1

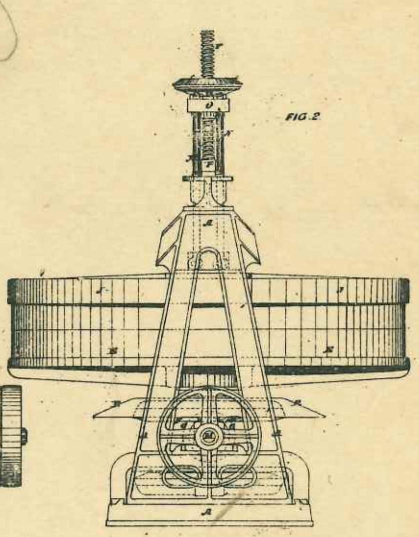

FIG.2

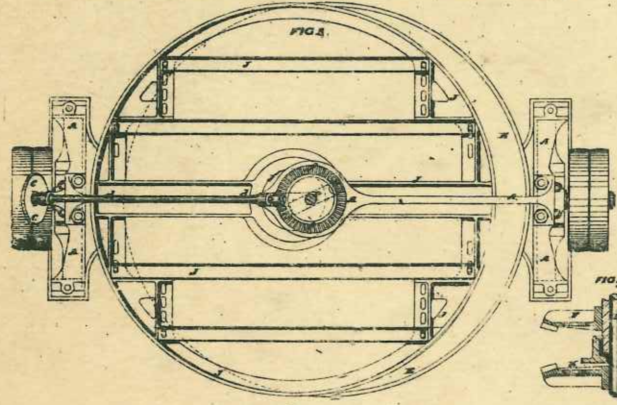

FIG.3

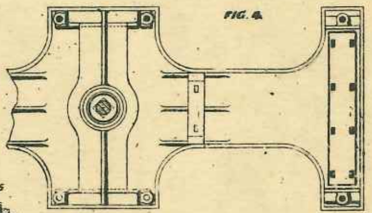

FIG.4

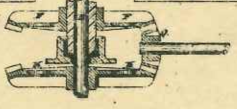

FIG.5

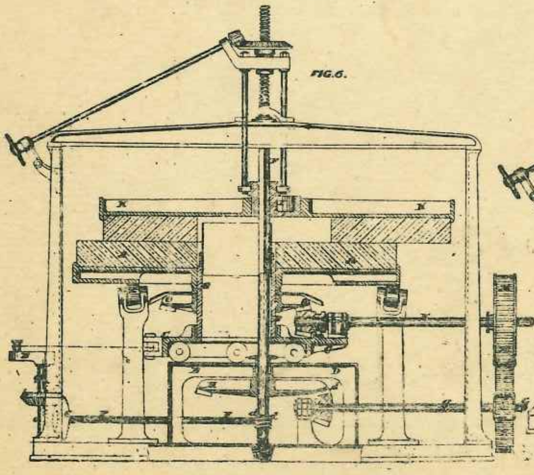

FIG.6

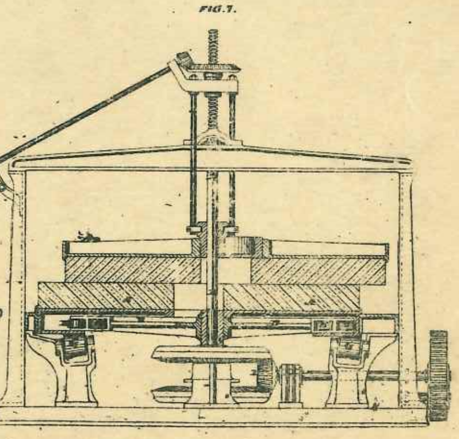

FIG.7

1,978. GRANT, W. May 11, 1876.

Surfacing and polishing-----Relates to improvements in the stone dressing or polishing machinery described in Specification No. 154, A. D. 1865. The pieces of stone to be rubbed against each other are held by eccentric tables E, J, revolving in opposite directions. The table J is carried by an eccentric on a square portion of the shaft B, which is driven by bevel gearing from a pulley shaft M, while the table E is carried by an eccentric on a sleeve on the shaft B, and is rotated by bevel gearing from a pulley shaft H. By means of rods N and a sleeve *a*, which works on a screw P and may be turned by bevel gearing, etc., from a hand wheel *c*, the stones may be adjusted to and from each other and their inspection may be facilitated. A shield R may be provided, as shown. In some cases, the wheels F, K may be driven from one pulley shaft by means of a single pinion. In a further modification, the lower table, in addition to its eccentric revolving motion, has imparted to it a reciprocating motion by means of crank and connecting rod mechanism worked from the shaft B, the mechanism for rotating it being modified to suit these arrangements; the table, in this case, is mounted on a hollow support on a wheeled truck running on the bed-plate of the machine. The upper table, or both tables, may be similarly operated. In a further modification, the lower table may be rotated in a circular path, eccentrically to the rotation of the upper table, by means of a carrier which supports it and is mounted on a sleeve on the shaft B, rollers on the carrier being situated in a channel in the under part of the table, while other rollers for supporting the table are also provided. Similar arrangements may be applied to either or both of the tables.